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Trykikipedia: Collaborative Bio-Ontology Development using Wiki Environment

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Introduction:

Biomedical ontology development is an intensely collaborative process between biology experts and computer scientists. With the proliferation of ontology based approach to solve informatics problems in biological domain, there is a need for collaborative environment that is intuitive and widely accepted for modeling the ontology.

Biologists (domain experts) define various concepts and relationships in the domain.

Motivation:

1. Traditional ontology development tools, such as Protégé, represents a steep learning curve for biologists.
2. Ontology development also involves interactive discussions that are recorded for future references.
3. The Web based wiki environment not only reduce the burden on ontology developers but also make the ontologies readily available to community members.

Implementation:

The wiki-based ontology development for parasite research, called Trykikipedia, has been implemented;

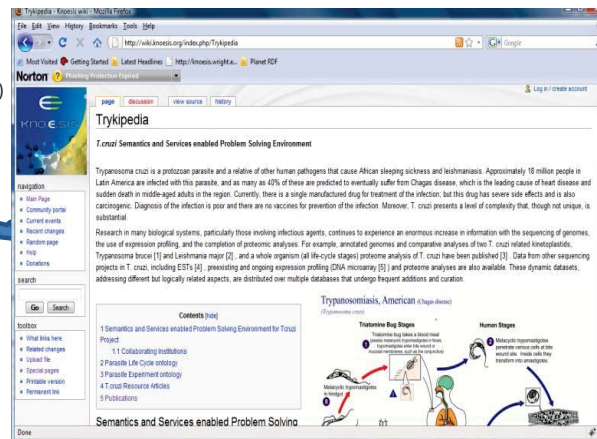
1. The wiki infrastructure is easy to setup and maintain.
2. The "history" of a wiki page enables users to track and analyze the evolution of content of a page



History of a page displaying the lineage of data

Trykikipedia was used to create two parasite-related ontologies:

1. Parasite Experiment ontology experiment protocols.
2. Parasite Life Cycle Ontology primarily models the lifecycle of *Trypanosoma cruzi* along with host information, vector information, strain and anatomical location.



Trykikipedia: <http://knoesis.wright.edu/Trykikipedia>

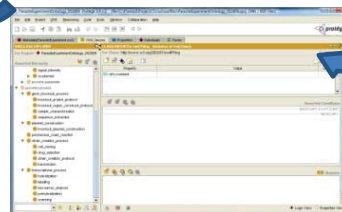
Refine concepts and relationships.

Trykikipedia updated with class information

Discussions organized in order to ease decision making for ontology development.

Trykikipedia pages are used as a resource for discussions, refinement and organizing activities of ontology development.

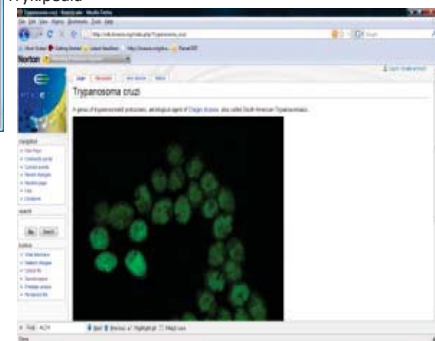
Ontology is refined based on the inputs form Trykikipedia



Ontology is developed in an incremental manner by computer scientists. This is also shared with biologists to create a formal model of the experiment processes.



The list of classes in the Parasite Experiment ontology in Trykikipedia



This is the image of *Trypanosoma cruzi* on Trykikipedia

Conclusions:

A wiki based collaborative environment for large projects involving a number of collaborators like in case of *T. cruzi*, facilitated the ability to organize information, refine and formulate various relationships involved in ontology modeling with ease by the use of wiki based environment.

Acknowledgement:

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References:

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- [3] Protégé reference <http://protege.stanford.edu/>